Missouri
Department of
Natural Resources

EAST FORK LOCUST CREEK
WBID 608

Recreational Use Attainability Analysis

May 2007

PREPARED FOR:
RFP No: B3Z07134
Water Quality Monitoring & Assessment Section
Water Protection Program
Division of Environmental Quality
MISSOURI DEPARTMENT OF NATURAL RESOURCES
P O Box 176
Jefferson City, MO 65102

PREPARED BY:
MEC WATER RESOURCES, INC.
1123 Wilkes Blvd., Ste. 400
Columbia, MO 65201

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	East Fork Locust Creek
Missouri Water Body Identification (WBID) Number:	608
8-digit HUC: 10280103	County: Sullivan
Upstream Legal Description (from Table H):	Hwy 6
Downstream Legal Description(from Table H):	Mouth
Number of sites evaluated	9
List all sites numbers, listed cnsequantly upstream to downstream:	1-E. THIRD STREET 2-HWY C 3-ROLLING ROAD 4-200m DOWNSTREAM ROLLING ROAD 5-400m DOWNSTREAM ROLLING RD 6-SILVER RD 7-200m DOWNSTREAM SILVER RD 8-HWY T 9-THUNDER ROAD

II. Subsegmentation (fill this section out only in cases where subsegmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates: UTM X	Y	Downstream Coordinates: UTM X	Y

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± _____ Feet or ± _____ Meters	
PDOP		± _____ Feet or ± _____ Meters

III. Discharger Facility Information (list all permitted dischargers on the stream)

Discharger Facility Name(s):	Auburn Hills WWTF, Milan WWTP
Discharger Permit Number(s):	MO 0119318, MO 0048151

IV. UAA Surveyor (please print legibly)

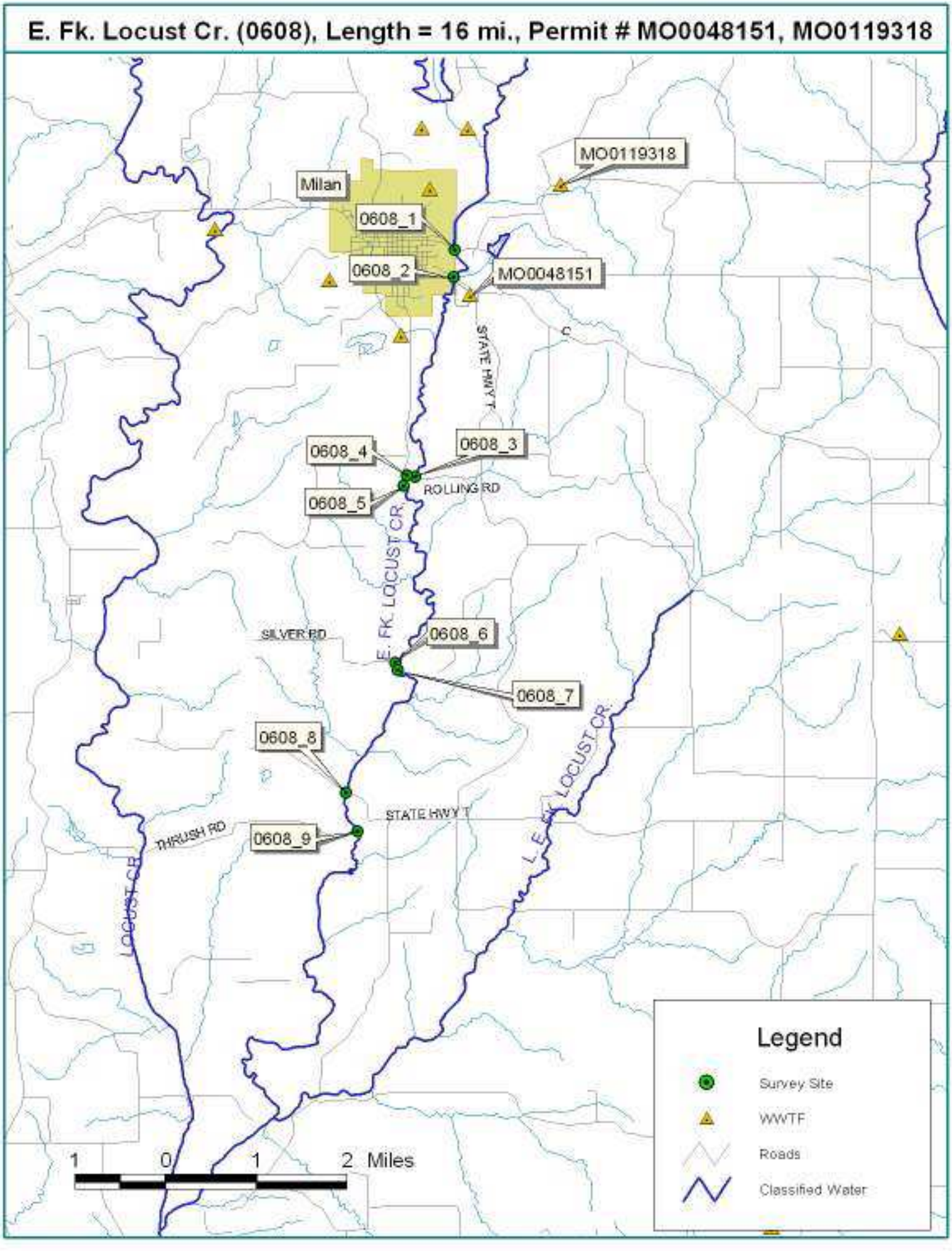
Name of Surveyor RENEE MARTIN	Telephone Number: (573) 443-4100
Organization/Employer: MEC Water Resources	
Position: ENV SPECIALIST	

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: Renee Martin **Date:** 5/22/07

MUC 5-24-07

5/25/07


E. Fk. Locust Cr. (0608), Length = 16 mi., Permit # MO0048151, MO0119318
Milan
0608_1
0608_2
MO0119318
MO0048151
STATE HWY T
0608_4
0608_3
0608_5
ROLLING RD
E. FK. LOCUST CR.
SILVER RD
0608_6
0608_7
0608_8
STATE HWY T
THRUSH RD
0608_9
LOCUST CR.
L. E. FK. LOCUST CR.
1 0 1 2 Miles
Legend
Survey Site
WWTF
Roads
Classified Water

WBID# 0608
Site# 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 07:35	Site Location Description (e.g., road crossing): EAST THIRD STREET BRIDGE CROSSING
Personnel (Data Collectors): R. MARTIN; J. TOTH	
Current Weather Conditions: Partly Cloudy	Facility Name: AUBURN HILLS WWTF; MILAN WWTP
	Permit Number: MO 0114318; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☒	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 0490401 Y: 4450041

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓ 16 m	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	✓
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± — Meters	Source Map Scale: 1:24,000 1:100,000 Other —
EPE	± 16 Feet or ± — Meters	± — Feet or ± — Meters
PDOP	—	

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608_1_207	UPSTREAM SITE #1; TRANSECT #1	0608_Pipe1_209	DOWNSTREAM, SITE #1 TRANSECT #1 - PIPE
0608_1_208	DOWNSTREAM SITE #1, TRANSECT #1	0608_Footprints1_211	UPSTREAM, SITE #1, TRANSECT #1
0608_cracked pipe1_210	DOWNSTREAM, SITE #1 TRANSECT # 2 - CRACKED PIPE		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

Agriculture

WBID# 0608
Site# 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☒ Other:
Comments: Field drain pipe					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	—	100	—	—	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

None

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
COLOR:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Anne Mart Date of Survey: 5/23/07

Organization: AE Solutions Position: Env. Specialist

RMC 5-24-07 5/25/07

February 16, 2007

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608_1
(WBID_Site#)

Estimated Channel Incision: 1.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 0490401 UTM Y: 4450041

Horizontal Accuracy Estimate (GPS Data Quality): +/- 16 (feet)

Average Stream Width: 9.0 (meters) Length of Survey Segment: 180 (meters)
(20x average stream width)

Field Staff: R. MARTIN & J. FOTH

Dissolved Oxygen

Date: 5/23/07 Time: 0735

Dissolved Oxygen: 7.09 (mg/L)

Dissolved Oxygen: 76.2 (% sat)

Specific Cond: 561.0 (µS/cm)

Water Temperature: 18.3 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.1	0.1	0.0	0.2	0.7	0.1 ~~0.7~~	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.3	0.1	0.0	0.2	0.4	0.1	0.2	0.1
2	1.0	0.5	0.9	0.5	1.1	0.1	1.0	0.6	1.1	<0.1	0.6	0.4	0.7	0.2	0.75	0.3	0.6	0.3	1.2	0.1	0.9	0.1
3	1.9	0.4	1.8	0.5	1.5	<0.1	2.0	0.6	2.2	0.0	1.1	0.5	1.2	0.2	1.2	0.5	1.2	0.2	2.0	0.1	1.6	0.2
4	2.8	0.4	2.7	0.5	1.9	0.1	3.0	0.4	3.3	0.0	1.6	0.4	1.7	0.2	1.65	0.6	1.8	0.2	2.8	0.1	2.3	0.2
5	3.7	0.4	3.6	0.5	2.3	0.1	4.0	0.4	4.4	<0.1	2.1	0.3	2.2	0.1	2.1	0.5	2.4	0.2	3.6	0.1	3.0	0.2
6	4.6	0.4	4.5	0.5	2.7	0.1	5.0	0.6	5.5	0.2	2.6	0.2	2.7	<0.1	2.55	0.4	3.0	0.2	4.4	0.1	3.7	0.2
7	5.5	0.3	5.4	0.6	3.1	0.1	6.0	0.7	6.6	0.1	3.1	0.2	3.2	0.1	3.0	0.2	3.6	0.1	5.2	0.1	4.4	0.2
8	6.4	0.2	6.3	0.4	3.5	0.2	7.0	>1.0	7.7	<0.1	3.6	0.2	3.7	0.2	3.45	0.2	4.2	0.1	6.0	0.1	5.1	0.1
9	7.3	0.2	7.2	0.6	3.9	0.2	8.0	>1.0	8.8	<0.1	4.1	0.1	4.2	0.2	3.9	0.1	4.8	0.1	6.8	<0.1	5.8	0.1
10	8.2	0.2	8.1	0.3	4.3	0.2	9.0	0.7	9.9	0.1	4.6	0.1	4.7	0.3	4.35	0.1	5.4	0.1	7.4	0.2	6.5	0.1
11	9.1	0.1	9.0	0.1	4.7	0.1	10.0	0.2	11.1	0.1	5.1	0.1	5.2	0.1	4.8	0.1	6.0	0.1	8.4	0.1	7.2	0.0
12	9.2	0.0	9.1	0.0	4.9	0.0	10.0	0.0	11.2	0.0	5.7	0.0	5.7	0.0	5.0	0.0	6.2	0.0	8.7	0.0	7.4	0.0
Feature Type (riffle, run, or pool)	POOL		POOL		RIFFLE		POOL		RUN		RUN		RUN		POOL		RUN		RUN		RUN	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

RMC 5-24-07

RMC 5/25/07

WBID# 0608
Site# 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 0840	Site Location Description (e.g., road crossing): HWY C BRIDGE CROSSING
Personnel (Data Collectors): R. MARTIN & J. FOTH	
Current Weather Conditions: PARTLY CLOUDY	Facility Name: AUBURN HILLS MHP, MILAN MHP
	Permit Number: MO 0119318; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☒	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 0490392 Y: 4449554

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	X
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± ___ Meters	Source Map Scale: 1:24,000 1:100,000 Other ___
EPE	± 23 Feet or ± ___ Meters	± ___ Feet or ± ___ Meters
PDOP	___	

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608-2-212	DOWNSTREAM, SITE #2 TRANSECT #1 - IRRIGATION PIPES		
0608-2-218	UPSTREAM, SITE #2 TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments: AGRICULTURE

WBID# 0608
Site# 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☒ Other:
Comments: IRRIGATION PIPES					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	—	100	—	—	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

NONE PRESENT

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
COLOR:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: AE SOLUTIONS Position: ENV. SPECIALIST

Rec'd 5-24-07 Ck'd 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608 - 2 (WBID_Site#)

Estimated Channel Incision: 1.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 0490392 UTM Y: 4449554

Horizontal Accuracy Estimate (GPS Data Quality): +/- 23 (feet)

Average Stream Width: 8 (meters) Length of Survey Segment: 160 (meters) (20x average stream width)

Field Staff: R. MARTIN ; J. IOTH

Dissolved Oxygen

Date: 5/23/07 Time: 0840

Dissolved Oxygen: 6.62 (mg/L)

Dissolved Oxygen: 70.0 (% sat)

Specific Cond: 562.0 (µS/cm)

Water Temperature: 18.6 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.1	0.1	0.8	0.1	0.1	0.1	0.4	0.1	1.4	0.1	0.1	0.1	1.4	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.9	0.1
2	0.9	0.2	1.35	0.1	1.2	0.1	1.25	0.2	2.4	0.1	1.3	0.1	2.05	0.2	0.75	0.1	0.75	0.2	0.5	0.4	1.25	0.1
3	1.7	0.3	1.9	0.2	2.3	0.1	2.1	0.2	3.4	0.1	2.5	0.1	2.7	0.2	1.3	0.2	1.4	0.2	0.8	0.5	1.6	0.1
4	2.5	0.2	2.45	0.2	3.4	0.2	2.95	0.2	4.4	0.2	3.7	<0.1	3.35	0.3	1.85	0.1	2.05	0.1	1.1	0.5	1.95	0.1
5	3.3	0.2	3.0	0.2	4.5	0.2	3.8	0.4	5.4	0.2	4.9	<0.1	4.0	0.3	2.4	0.2	2.7	0.2	1.4	0.5	2.3	0.2
6	4.1	0.4	3.55	0.2	5.6	0.2	4.65	0.4	6.4	0.1	6.1	0.0	4.65	0.3	2.95	0.2	3.35	0.3	1.7	0.4	2.65	0.2
7	4.9	0.4	4.1	0.2	6.7	0.2	5.5	0.6	7.4	<0.1	7.3	0.2	5.3	0.3	3.5	0.2	4.0	0.2	2.0	0.4	3.0	0.2
8	5.7	0.5	4.65	0.3	7.8	0.1	6.35	0.6	8.4	0.3	8.5	0.4	5.95	0.3	4.05	0.3	4.65	0.2	2.3	0.3	3.35	0.2
9	6.5	0.5	5.2	0.3	8.9	0.1	7.2	0.7	9.4	0.2	9.7	0.4	6.6	0.2	4.6	0.2	5.3	0.1	2.6	0.2	3.7	0.2
10	7.3	0.4	5.75	0.2	10.0	0.1	8.05	0.6	10.4	0.2	10.9	0.4	7.25	0.1	5.15	0.3	5.95	0.1	2.9	0.1	4.05	0.2
11	8.1	0.2	6.3	0.1	11.1	0.1	8.9	0.1	11.4	0.1	12.1	0.1	7.9	0.1	5.7	0.2	6.6	0.1	3.2	0.1	4.4	0.1
12	8.1	0.2	7.8	0.0	11.4	0.0	9.1	0.0	11.6	0.0	12.2	0.0	8.1	0.0	5.7	0.2	7.6	0.0	5.5	0.0	4.8	0.0
Feature Type (riffle, run, or pool)	POOL		RUN		RUN		POOL		RUN		RUN/POOL		RUN		RUN		RUN		POOL/RUN		RUN	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

GHC 5-24-07

CAK 5/25/07

WBID# 0608
Site# 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 0945	Site Location Description (e.g., road crossing): ROLLING ROAD BRIDGE CROSSING
Personnel (Data Collectors): R. MARTIN ; J. FOTH	
Current Weather Conditions: PARTLY CLOUDY	Facility Name: AUBURN HILLS MWTF; MILAN WWTP
	Permit Number: MO 0119318 ; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☒	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 0489725 Y: 4446015

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	✓
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	✓
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± ✓ Meters	Source Map Scale: 1:24,000 1:100,000 Other ✓
EPE	± 16 Feet or ± ✓ Meters	± ✓ Feet or ± ✓ Meters
PDOP		

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608-3.214	UPSTREAM SITE #3 TRANSECT #1		
0608.3.215	DOWNSTREAM SITE #3 TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☒ No trespass sign	☒ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 0608
Site# rm 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:
Comments: NONE					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	—	100	—	—	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

NONE

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
COLOR:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: AE Solutions Position: ENV. Specialist

RWC 5-24-07 AK 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0609 Site #: 0608-3 (WBID_Site#)

Estimated Channel Incision: <1.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 0489723 UTM Y: 4446017

Horizontal Accuracy Estimate (GPS Data Quality): +/- 16 (feet)

Average Stream Width: 7.5 (meters) Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: Ryan Martin ; Justyn Foth

Dissolved Oxygen

Date: 5/23/07 Time: 0945

Dissolved Oxygen: 8.21 (mg/L)

Dissolved Oxygen: 88.9 (% sat)

Specific Cond: 561.0 (µS/cm)

Water Temperature: 19.4 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.4	0.0	0.2	0.2	0.1	0.1	0.1
2	0.4	0.3	0.7	0.2	0.8	0.4	0.5	>1.0	0.8	0.6	0.7	>1.0	0.7	0.4	0.7	1.0	0.7	0.7	1.0	0.4	0.8	0.4
3	0.8	0.5	1.3	0.1	1.4	0.4	1.0	>1.0	1.5	1.0	1.4	>1.0	1.4	1.0	1.4	>1.0	1.4	1.0	1.8	0.8	1.5	0.7
4	1.2	0.3	1.9	0.2	2.0	0.4	1.5	0.9	2.2	>1.0	2.1	>1.0	2.1	>1.0	2.1	>1.0	2.1	>1.0	2.6	1.0	2.2	1.0
5	1.6	0.2	2.5	0.1	2.6	0.4	2.0	0.8	2.9	>1.0	2.8	>1.0	2.8	>1.0	2.8	>1.0	2.8	>1.0	3.4	>1.0	2.9	>1.0
6	2.0	0.2	3.1	0.1	3.2	0.4	2.5	0.6	3.6	1.0	3.5	>1.0	3.5	>1.0	3.5	>1.0	3.5	>1.0	4.2	>1.0	3.6	>1.0
7	2.4	0.2	3.7	0.1	3.8	0.3	3.0	0.5	4.3	0.8	4.2	>1.0	4.2	>1.0	4.2	>1.0	4.2	>1.0	5.0	>1.0	4.3	>1.0
8	2.8	0.2	4.3	0.1	4.4	0.3	3.5	0.4	5.0	0.5	4.9	>1.0	4.9	>1.0	4.9	>1.0	4.9	>1.0	5.8	>1.0	5.0	>1.0
9	3.2	0.2	4.9	0.4	5.0	0.2	4.0	0.3	5.7	0.3	5.6	>1.0	5.6	0.8	5.4	1.0	5.4	>1.0	6.6	>1.0	5.7	>1.0
10	3.6	0.1	5.5	0.3	5.6	0.2	4.5	0.2	6.4	0.2	6.3	>1.0	6.3	0.8	6.3	0.7	6.3	>1.0	7.4	>1.0	6.4	>1.0
11	4.0	0.1	6.1	0.1	6.2	0.1	5.0	0.1	7.1	0.1	7.0	>1.0	7.0	0.1	7.0	0.4	7.0	0.6	8.2	>1.0	7.1	0.7
12	4.2	0.0	6.3	0.0	8.0	0.0	5.8	0.0	7.3	0.0	7.1	0.0	7.2	0.0	7.5	0.0	7.1	0.0	8.5	0.0	7.3	0.0
Feature Type (riffle, run, or pool)	Run		Run		Pool		Pool		Pool		Pool		Pool		Pool		Pool		Pool		Pool	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

RMC 5-24-07

JFK 5/25/07

WBID# 0608
Site# 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 1025	Site Location Description (e.g., road crossing): 200m DOWNSTREAM ROLLING ROAD BRIDGE CROSSING
Personnel (Data Collectors): R Mauha ; J. Fox	
Current Weather Conditions: P. Cloudy	Facility Name: AUBURN HILLS WWTF, MILAN WWTP
	Permit Number: MO 011 9318 ; MO 0048151
Weather Conditions for Past 10 days: UNknown	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☒	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 489577 Y: 4446039

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	X
Precise Positioning Service	X	Satellite Imagery	
Signal Averaging	X	Interpolation Other	X
Real Time Differential Processing	X		

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± ___ Meters	Source Map Scale: 1:24,000 1:100,000 Other ___
EPE	± 17 Feet or ± ___ Meters	± ___ Feet or ± ___ Meters
PDOP	___	

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608_4_216	UPSTREAM, SITE #4; TRANSECT #1		
0608_4_217	DOWNSTREAM, SITE #4; TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 0608
Site# 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:
Comments: None					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	—	100	—	—	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

None

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
COLOR:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: AE SOLUTIONS Position: ENV. SPECIALIST

RWC 5-24-07 MK 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608 – 4 (WBID_Site#)

Estimated Channel Incision: 1.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 489577 UTM Y: 4446039

Horizontal Accuracy Estimate (GPS Data Quality): +/- 17 (feet)

Average Stream Width: 7.5 (meters) Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: R. MARTIN & J. FOTH

Dissolved Oxygen

Date: 5/23/07 Time: 1025

Dissolved Oxygen: 7.45 (mg/L)

Dissolved Oxygen: 81.1 (% sat)

Specific Cond: 563 (µS/cm)

Water Temperature: 19.5 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.1	0.1	0.2	0.1	0.5	0.1	0.0	0.4	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.4	0.0	0.1	0.9	0.1
2	0.75	0.6	0.9	0.3	1.2	0.2	0.85	1.0	1.2	0.4	0.5	0.1	0.75	0.2	0.85	0.4	0.85	0.5	0.65	0.5	1.4	0.1
3	1.4	0.7	1.4	0.5	1.9	0.3	1.7	>1.0	2.2	0.5	1.0	0.2	1.4	0.1	2.0	0.7	1.7	0.4	1.3	0.7	1.9	0.2
4	2.05	0.8	2.3	0.6	2.6	0.3	2.55	>1.0	3.2	0.7	1.5	0.2	2.05	0.2	2.95	0.6	2.55	0.4	1.95	0.7	2.4	0.2
5	2.7	0.8	3.0	0.8	3.3	0.3	3.4	>1.0	4.2	0.7	2.0	0.2	2.7	0.2	3.9	0.4	3.4	0.3	2.6	0.4	2.9	0.2
6	3.35	0.8	3.7	0.9	4.0	0.4	4.25	>1.0	5.2	0.7	2.5	0.1	3.35	0.2	4.85	0.2	4.25	0.2	3.25	0.4	3.4	0.3
7	4.0	0.7	4.4	0.9	4.7	0.4	5.1	>1.0	6.2	0.4	3.0	0.1	4.0	0.2	5.8	0.1	5.1	0.2	3.9	0.3	3.9	0.3
8	4.45	0.7	5.1	0.9	5.4	0.5	5.95	>1.0	7.2	0.5	3.5	0.2	4.65	0.2	6.75	0.2	5.95	0.1	4.55	0.1	4.4	0.3
9	5.3	0.7	5.8	0.8	6.1	0.5	6.8	>1.0	8.2	0.6	4.0	0.1	5.3	0.2	7.70	0.3	6.8	0.2	5.2	<0.1	4.9	0.3
10	5.95	0.5	6.5	0.5	6.8	0.3	7.65	0.8	9.2	0.6	4.5	0.1	5.95	0.1	8.65	0.3	7.45	0.2	5.85	<0.1	5.4	0.3
11	6.6	0.1	7.2	0.1	7.5	0.1	8.5	0.1	10.2	0.1	5.0	0.1	6.6	0.1	9.6	0.1	8.5	0.1	6.5	0.1	5.9	0.1
12	6.9	0.0	7.3	0.0	8.0	0.0	8.6	0.0	10.3	0.0	6.0	0.0	7.0	0.0	10.0	0.0	8.8	0.0	6.7	0.0	6.4	0.0
Feature Type (riffle, run, or pool)	POOL		POOL		POOL		POOL		POOL		RIFFLE		RUN		POOL		POOL		POOL		RUN	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

ANC 5-24-07 5/25/07

WBID# 0608
Site# 5

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 1105	Site Location Description (e.g., road crossing): 400 m DOWNSTREAM ROLLING ROAD BRIDGE CROSSING
Personnel (Data Collectors): R. MARTIN & J. FOTH	
Current Weather Conditions: P. CLOUDY	Facility Name: AUBURN HILLS WWTP; MILAN WWTP
	Permit Number: MO 0119318; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☑	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 489521 Y: 4445846

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	
Dynamic Mode (Kinematic)	X	Aerial Photograph or DOQQ	
Precise Positioning Service	X	Satellite Imagery	X
Signal Averaging	X	Interpolation Other	
Real Time Differential Processing	X		

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± ~ Meters	Source Map Scale: 1:24,000 1:100,000 Other ~
EPE	± 19 Feet or ± ~ Meters	± ~ Feet or ± ~ Meters
PDOP		

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608_5_218	UPSTREAM, SITE #5, TRANSECT #1		
0608_5_219	DOWNSTREAM, SITE #5, TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 0608
Site# 5

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:
Comments: None					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	100 % Sand	% Silt	% Mud/Clay	% Bedrock
—	—		—	—	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

None

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: RESOLUTIONS Position: ENV. SPECIALIST

RWC 5-24-07 JK 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608-5 (WBID_Site#)

Estimated Channel Incision: <1.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 489521 UTM Y: 4445846 am 19

Horizontal Accuracy Estimate (GPS Data Quality): +/- ~~4445846~~ (feet)

Average Stream Width: 9.0 (meters) Length of Survey Segment: 180 (meters) (20x average stream width)

Field Staff: R. MARTIN, J. FOTH

Dissolved Oxygen

Date: 5/23/07 Time: 1105

Dissolved Oxygen: 6.38 (mg/L)

Dissolved Oxygen: 68.8 (% sat)

Specific Cond: 571 (µS/cm)

Water Temperature: 19.7 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.0	0.2	0.0	0.1	0.0	0.2	0.1	0.1	0.3	0.1
2	0.95	0.3	0.8	0.4	1.0	0.4	1.3	0.2	1.0	0.4	1.0	0.5	0.85	0.6	1.3	0.7	0.85	0.6	0.7	0.4	1.15	0.3
3	1.8	0.5	1.5	0.5	2.0	0.4	2.5	0.2	1.8	0.5	2.0	0.5	1.7	0.4	2.6	0.7	1.7	0.8	1.3	0.8	2.0	0.5
4	2.65	0.6	2.2	0.6	3.0	0.4	3.7	0.2	2.6	0.5	3.0	0.4	2.55	0.2	3.9	0.9	2.55	0.9	1.9	0.9	2.85	0.6
5	3.5	0.6	2.9	0.7	4.0	0.5	4.9	0.2	3.4	0.4	4.0	0.3	3.4	0.3	5.2	0.8	3.4	1.0	2.5	1.0	3.7	0.7
6	4.35	0.6	3.6	0.8	5.0	0.6	6.1	0.2	4.2	0.4	5.0	0.3	4.25	0.4	6.5	0.7	4.25	1.0	3.1	0.8	4.55	0.8
7	5.2	0.7	4.3	0.9	6.0	0.6	7.3	0.3	5.0	0.4	6.0	0.2	5.1	0.3	7.8	0.5	5.1	>1.0	3.7	0.5	5.4	0.9
8	6.05	0.7	5.0	>1.0	7.0	0.5	8.5	0.3	5.8	0.3	7.0	0.2	5.95	0.3	9.1	0.6	5.95	0.7	4.3	0.4	6.25	0.8
9	6.9	0.7	5.7	0.6	8.0	0.3	9.7	0.1	6.6	0.3	8.0	0.2	6.8	0.3	10.4	0.3	6.8	0.3	4.9	0.4	7.1	0.6
10	7.75	0.7	6.4	0.8	9.0	0.2	10.9	0.1	7.4	0.2	9.0	0.4	7.65	0.2	11.7	0.1	7.65	0.3	5.5	0.4	7.95	0.4
11	8.4	0.3	7.1	0.1	10.0	0.1	12.1	0.1	8.2	0.2	10.0	0.1	8.5	0.1	13.0	0.1	8.5	0.1	6.1	0.1	8.8	0.1
12	8.5	0.3	7.3	0.0	10.2	0.0	12.9	0.0	8.6	0.2	10.5	0.0	9.8	0.0	13.1	0.0	8.6	0.0	6.2	0.0	9.3	0.0
Feature Type (riffle, run, or pool)	POOL		POOL		POOL		RUN		POOL		POOL		POOL		POOL		POOL		POOL		POOL	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: _____ Date: 5/23/07

RHC 5-24-07 AK 5/24/07

WBID# 0608
Site# 6

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 1230	Site Location Description (e.g., road crossing): SILVER ROAD
Personnel (Data Collectors): D. MARTIN & J. FOTH	
Current Weather Conditions: P. CLOUDY	Facility Name: AUBURN HILLS WWTF; MILAN WWTP
	Permit Number: MO 0119318; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☑	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 0489371 Y: 4442728

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service	X	Satellite Imagery	X
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± ___ Meters	Source Map Scale: 1:24,000 1:100,000 Other ___
EPE	± 21 Feet or ± ___ Meters	± ___ Feet or ± ___ Meters
PDOP		

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608-6-220	UPSTREAM, SITE #6 TRANSECT #1		
0608-6-221	DOWNSTREAM, SITE #6 TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:
Agriculture

WBID# 0608
Site# 6

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:
Comments: None					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	—	100	—	—	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

NONE

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
COLOR:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: _____ Date of Survey: 5/23/07

Organization: AE Solutions Position: Env. Specialist

RWC 5-24-07 CBC 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608 – 6 (WBID_Site#)

Estimated Channel Incision: 5.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 0489371 UTM Y: 4442728

Horizontal Accuracy Estimate (GPS Data Quality): +/- 21 (feet)

Average Stream Width: 8.5 (meters) Length of Survey Segment: 160 (meters) (20x average stream width)

Field Staff: R. MARTIN & J. FOTH

Dissolved Oxygen

Date: 5/23/07 Time: ~~103~~ Pm 1230

Dissolved Oxygen: 5.99 (mg/L)

Dissolved Oxygen: 67.3 (% sat)

Specific Cond: 565 (µS/cm)

Water Temperature: 22.3 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	1.0	0.0	0.2	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.6	0.1
2	1.5	0.1	0.65	0.1	0.6	0.2	0.8	0.1	0.9	0.3	0.5	0.3	0.7	0.3	0.6	0.3	0.45	0.6	0.7	0.3	1.1	0.2
3	2.0	0.1	1.1	0.2	1.1	0.2	1.5	0.1	1.7	0.2	0.8	0.6	1.3	0.4	0.9	0.3	0.7	0.6	1.2	0.3	1.6	0.2
4	2.5	0.1	1.55	0.2	1.6	0.2	2.2	0.2	2.5	0.1	1.1	0.6	1.9	0.4	1.2	0.2	0.95	0.5	1.7	0.3	2.1	0.2
5	3.0	0.1	2.0	0.2	2.1	0.1	2.9	0.2	3.3	0.1	1.4	0.7	2.5	0.6	1.5	0.2	1.2	0.5	2.2	0.4	2.6	0.2
6	3.5	0.2	2.45	0.2	2.6	0.1	3.6	0.1	4.1	0.1	1.7	0.7	3.1	0.4	1.8	0.2	1.45	0.4	2.7	0.5	3.1	0.3
7	4.0	0.2	2.9	0.2	3.1	0.1	4.3	0.2	4.9	0.1	2.0	0.3	3.7	0.3	2.1	0.2	1.7	0.3	3.2	0.5	3.6	0.4
8	4.5	0.2	3.35	0.1	3.6	0.1	5.0	0.3	5.7	0.1	2.3	0.4	4.3	0.3	2.4	0.1	1.95	0.2	3.7	0.5	4.1	0.4
9	5.0	0.2	3.8	0.1	4.1	0.1	5.7	0.2	6.5	0.1	2.6	0.4	4.9	0.3	2.7	0.1	2.2	0.2	4.2	0.4	4.6	0.2
10	5.5	0.1	4.25	0.1	4.6	0.1	6.4	0.1	7.3	0.1	2.9	0.5	5.5	0.2	3.0	0.1	2.45	0.1	4.7	0.2	5.1	0.2
11	6.0	0.1	4.7	0.1	5.1	0.1	7.1	0.1	8.1	0.1	3.2	0.1	6.1	0.1	3.3	0.1	2.7	0.1	5.2	0.1	5.5	0.1
12	6.2	0.0	5.3	0.0	5.3	0.0	7.2	0.0	8.4	0.0	3.9	0.0	7.1	0.0	4.7	0.0	3.2	0.0	5.8	0.0	5.6	0.0
Feature Type (riffle, run, or pool)	RUN		RUN		RUN		RUN		RUN		Rm ~~Run~~ POOL		POOL		Riffle		Run/Pool		POOL		RUN	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

RMC 5-24-07 JFK 5/25/07

WBID# 0608
Site# 7

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 1300	Site Location Description (e.g., road crossing): 200 m DOWNSTREAM SILVER RD
Personnel (Data Collectors): R. MARTIN & J. FOTH	
Current Weather Conditions: P. CLOUDY	Facility Name: AUBURN HILLS WWTF; MILAN WWTP
	Permit Number: MO 0119318; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☒	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 0489418 Y: 4442597

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± ____ Meters	Source Map Scale: 1:24,000 1:100,000 Other ____
EPE	± 27 Feet or ± ____ Meters	± ____ Feet or ± ____ Meters
PDOP	____	

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608_7_222	UPSTREAM SITE #7; TRANSECT #1		
0608_7_223	DOWNSTREAM SITE #7; TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments: Agriculture

WBID# 608
Site# 7

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:
Comments: NONE					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	10 % Gravel	90 % Sand	% Silt	% Mud/Clay	% Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: AE SOLUTIONS Position: ENV. SPECIALIST

DMC 5-24-07 DK 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608_~~7~~ (WBID_Site#)

Estimated Channel Incision: 3.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 0489418 UTM Y: 4442597

Horizontal Accuracy Estimate (GPS Data Quality): +/- 27 (feet)

Average Stream Width: 8 (meters) Length of Survey Segment: 160 (meters) (20x average stream width)

Field Staff: R. MARTIN & J. ~~FOTH~~

Dissolved Oxygen

Date: 5/23/07 Time: 1300

Dissolved Oxygen: 5.99 (mg/L)

Dissolved Oxygen: 68.1 (% sat)

Specific Cond: 565 (µS/cm)

Water Temperature: 22.5 (°C)

Transect Cross-Section

Measurement	01 Distance (m)	01 Depth (m)	02 Distance (m)	02 Depth (m)	03 Distance (m)	03 Depth (m)	04 Distance (m)	04 Depth (m)	05 Distance (m)	05 Depth (m)	06 Distance (m)	06 Depth (m)	07 Distance (m)	07 Depth (m)	08 Distance (m)	08 Depth (m)	09 Distance (m)	09 Depth (m)	10 Distance (m)	10 Depth (m)	11 Distance (m)	11 Depth (m)
1	0.3	0.1	0.2	0.1	0.0	0.1	1.0	0.1	0.1	0.1	0.1	0.6	0.1	0.1	0.2	0.1	0.4	0.1	0.4	0.1	0.3	0.1
2	1.0	0.1	1.2	0.2	1.2	0.2	1.25	0.1	0.5	0.2	0.5	0.3	0.8	0.5	1.1	0.2	1.0	0.1	1.15	0.1	0.75	0.2
3	1.7	0.1	2.2	0.4	2.4	0.2	1.5	0.1	0.9	0.3	0.9	0.4	1.5	0.4	2.0	0.2	1.6	0.2	1.9	0.2	1.2	0.3
4	2.4	<0.1	3.2	0.4	3.6	0.2	1.75	0.2	1.3	0.2	1.3	0.5	2.2	0.4	2.9	0.0	2.2	0.3	2.65	0.2	1.65	0.3
5	3.1	<0.1	4.2	0.5	4.8	0.1	2.0	0.2	1.7	0.3	1.7	0.6	2.9	0.3	3.8	0.0	2.8	0.2	3.4	0.2	2.1	0.2
6	3.8	0.1	5.2	0.6	6.0	0.1	2.25	0.2	2.1	0.3	2.1	0.6	3.6	0.3	4.7	<0.1	3.4	0.1	4.15	0.1	2.55	0.2
7	4.5	0.2	6.2	0.6	7.2	0.1	2.5	0.2	2.5	0.4	2.5	0.7	4.3	0.2	5.6	<0.1	4.0	0.2	4.9	0.1	3.0	0.2
8	5.2	0.3	7.2	0.7	8.4	0.1	2.75	0.2	2.9	0.3	2.9	0.7	5.0	0.2	6.5	<0.1	4.6	0.1	5.65	<0.1	3.45	0.2
9	5.9	0.2	8.2	0.3	9.6	0.2	3.0	0.2	3.3	0.3	3.3	0.5	5.7	0.2	7.4	0.1	5.2	0.1	6.4	<0.1	3.9	0.2
10	6.6	0.1	9.2	0.5	10.8	0.2	3.25	0.2	3.7	0.2	3.7	0.4	6.4	0.2	8.3	0.1	5.8	0.1	7.15	<0.1	4.35	0.2
11	7.3	0.1	10.2	0.1	12.0	0.1	3.5	0.1	4.1	0.2	4.1	0.1	7.1	0.1	9.2	0.1	6.4	0.1	7.9	0.1	4.8	0.1
12	8 cm 7.5	0.0	10.8	0.0	12.1	0.0	5.0	0.0	4.1	0.2	4.3	0.1	7.3	0.0	9.5	0.0	6.5	0.0	8.0	0.0	5.9	0.0
Feature Type (riffle, run, or pool)	RIFFLE		POOL		RUN		RUN		RUN		RUN/POOL		RUN		RUN		RUN		RIFFLE		RUN	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

AWC 5-24-07

AK 5/25/07

WBID# 0608
Site# 8

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 1345	Site Location Description (e.g., road crossing):
Personnel (Data Collectors): R. MARTIN & V. ROTH	HWY T - BRIDGE CROSSING
Current Weather Conditions: P. CLOUDY	Facility Name: AUBURN HILLS WWTF; MILAN WWTP
	Permit Number: MO 0119318; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☑	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 0488492 Y: 4440419

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	X
Precise Positioning Service	X	Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± ___ Meters	Source Map Scale: 1:24,000 1:100,000 Other ___
EPE	± 16 Feet or ± ___ Meters	± ___ Feet or ± ___ Meters
PDOP	___	

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608-8-224	UPSTREAM, SITE #8 TRANSECT #1 - PIPE		
0608-8-225	DOWN STREAM; SITE #8 TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 0608
Site# 8

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☒ Other:
Comments: Pipe upstream Transect #1					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	20	80	—	—	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

RM 1 NONE

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
COLOR:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: AE Solutions Position: ENV. Specialist

AMC 5-24-07 AMC 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608_8 (WBID_Site#)

Estimated Channel Incision: 21.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 0488492 UTM Y: 4440419

Horizontal Accuracy Estimate (GPS Data Quality): +/- 23 (feet)

Average Stream Width: 7.5 (meters) Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: R. MARTIN & J. FOTH

Dissolved Oxygen

Date: 5/23/07 Time: 1345

Dissolved Oxygen: 6.34 (mg/L)

Dissolved Oxygen: 70.5 (% sat)

Specific Cond: 532 (µS/cm)

Water Temperature: 21.7 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.8	0.1	1.0	dry	0.4	0.1	0.7	0.1	0.5	0.1	0.4	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.1
2	1.7	0.1	1.65	0.2	1.5	0.3	1.3	0.2	0.8	0.1	0.9	0.2	0.65	0.3	1.0	0.5	1.1	0.3	1.0	0.5	1.2	0.4
3	2.6	0.2	2.3	0.2	2.6	0.5	1.9	0.3	1.1	0.1	1.4	0.2	1.2	0.3	2.0	0.4	2.1	0.3	1.8	0.7	2.2	0.7
4	3.5	0.3	2.95	0.2	3.7	0.6	2.5	0.3	1.5	0.2	1.9	0.3	1.75	0.3	3.0	0.3	3.1	0.7	2.6	0.7	3.2	0.6
5	4.4	0.3	3.4	0.3	4.6	0.7	3.1	0.3	1.8	0.2	2.4	0.3	2.3	0.2	4.0	0.3	4.1	0.7	3.4	0.7	4.2	0.6
6	5.3	0.4	4.25	0.3	5.9	0.7	3.7	0.3	2.1	0.2	2.9	0.2	2.55	0.2	5.0	0.1	5.1	0.6	4.2	0.6	5.2	0.3
7	6.2	0.4	4.9	0.3	7.0	0.9	4.3	0.4	2.4	0.2	3.4	0.2	3.4	0.2	6.0	0.0	6.1	0.5	5.0	0.4	6.2	0.3
8	7.1	0.4	5.55	0.4	8.1	1.0	4.9	0.3	2.7	0.2	3.9	0.1	3.95	0.1	7.0	0.1	7.1	0.3	5.8	0.4	7.2	0.2
9	8.0	0.4	6.2	0.6	9.2	0.8	5.5	0.2	3.0	0.2	4.4	0.1	4.5	0.1	8.0	0.2	8.1	0.2	6.6	0.3	8.2	0.2
10	8.9	0.5	6.85	0.5	10.3	0.6	6.1	0.1	3.3	0.1	4.9	0.1	5.05	0.1	9.0	0.2	9.1	0.3	7.4	0.1	9.2	0.1
11	9.8	0.1	7.5	0.2	11.4	0.2	6.7	0.1	3.6	0.1	5.4	0.1	5.6	0.1	10.0	0.1	10.1	0.3	8.2	0.1	10.2	0.1
12	10.0	0.0	7.5	0.2	12.0	0.2	7.2	0.0	3.7	0.0	6.4	0.0	7.7	0.0	10.3	0.0	10.2	0.0	9.2	0.0	10.5	0.0
Feature Type (riffle, run, or pool)	POOL		POOL		POOL		RUN		RUN		RUN		RUN		RUN		POOL		POOL		POOL	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

QAC 5-24-07

QAC 5/25/07

WBID# 0608
Site# 9

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/23/07 1430	Site Location Description (e.g., road crossing): THUNDER ROAD
Personnel (Data Collectors): R. MARTIN & J. FOTH	
Current Weather Conditions: P. CLOUDY	Facility Name: AUBURN HILLS WWTF; MILAN WWTP
	Permit Number: MO 011 9318; MO 0048151
Weather Conditions for Past 10 days: UNKNOWN	
Drought Conditions?: No drought ☐; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☑	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 0488697 Y: 4439737

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode	✓	Topographic Map or DRG	✓
Dynamic Mode (Kinematic)	X	Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	X
Signal Averaging		Interpolation Other	
Real Time Differential Processing	X		

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± — Meters	Source Map Scale: 1:24,000 1:100,000 Other —
EPE	± 42 Feet or ± — Meters	± — Feet or ± — Meters
PDOP	—	

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
0608-9-226	UPSTREAM SITE #9 TRANSECT #1		
0608-9-228	DOWNSTREAM SITE #9 TRANSECT #1		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 0608
Site# 9

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:
Comments: None					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

— % Cobble	5 % Gravel	95 % Sand	— % Silt	— % Mud/Clay	— % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

NONE

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
COLOR:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: AE SOLUTIONS Position: ENV. SPECIALIST

RLC 5-24-07
ATK 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0608 Site #: 0608_9 (WBID_Site#)

Estimated Channel Incision: <1.0 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 0488697 UTM Y: 4439737

Horizontal Accuracy Estimate (GPS Data Quality): +/- 42 (feet)

Average Stream Width: 9.0 (meters) Length of Survey Segment: 180 (meters) (20x average stream width)

Field Staff: R. MARTIN & J. FOTH

Dissolved Oxygen

Date: 5/23/07 Time: 1430

Dissolved Oxygen: 4.98 (mg/L)

Dissolved Oxygen: 60.5 (% sat)

Specific Cond: 536 (µS/cm)

Water Temperature: 22.9 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.1	0.1	0.4	0.1	1.2	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.2	0.1	0.3	0.1	0.1	0.1	0.0	0.4	0.1	0.1
2	0.9	0.1	1.35	<0.1	1.4	0.3	1.2	0.3	1.3	0.2	1.0	0.1	0.9	0.4	1.05	0.2	0.5	0.5	1.1	0.8	1.1	0.6
3	1.7	<0.1	2.3	<0.1	2.6	0.4	2.3	0.4	2.5	<0.1	1.5	0.2	1.6	0.3	1.8	0.3	0.9	0.5	2.2	>1.0	2.1	>1.0
4	2.5	0.1	3.25	0.1	3.8	0.3	3.4	0.3	3.7	0.4	2.0	0.3	2.3	0.3	2.55	0.2	2.3	0.6	3.3	1.0	3.1	1.0
5	3.3	0.1	4.2	0.1	5.0	0.4	4.5	0.3	4.9	0.6	2.5	0.4	3.0	0.3	3.3	0.2	2.7	0.4	4.4	0.8	4.1	0.9
6	4.1	0.2	5.15	0.1	6.2	0.4	5.6	0.4	6.1	0.7	3.0	0.4	3.7	0.3	4.05	0.2	3.1	0.2	5.5	0.7	5.1	0.8
7	4.9	0.2	6.1	0.1	7.4	0.5	6.7	0.6	7.3	0.8	3.5	0.5	4.4	0.4	4.8	<0.1	3.5	0.3	6.6	0.9	6.1	0.6
8	5.7	0.2	7.05	0.1	8.6	0.5	7.8	0.5	8.5	0.9	4.0	0.5	5.1	0.2	5.55	<0.1	3.9	0.2	7.7	0.8	7.1	0.5
9	6.5	0.2	8.0	0.2	9.8	0.5	8.9	0.5	9.7	0.9	4.5	0.3	5.8	0.2	6.3	<0.1	4.3	0.2	8.8	0.6	8.1	0.5
10	7.3	0.2	8.95	0.2	11.0	0.8	10.1	0.4	10.9	0.6	5.0	0.2	6.5	0.1	7.05	<0.1	4.7	0.1	9.9	0.3	9.1	0.4
11	8.1	0.1	9.9	0.1	12.2	0.2	11.2	0.1	12.1	0.1	5.5	0.1	7.2	0.1	7.5	0.1	5.1	0.1	11.0	0.1	10.1	0.1
12	8.5	0.0	9.9	0.0	12.2	0.2	12.0	0.0	12.5	0.0	5.8	0.0	7.3	0.0	8.0	0.0	5.4	0.0	12.0	0.0	10.7	0.0
Feature Type (riffle, run, or pool)	RUN		~~RIFFLE~~ RUN		POOL		POOL		POOL		RUN		RUN		RUN		POOL		POOL		POOL	

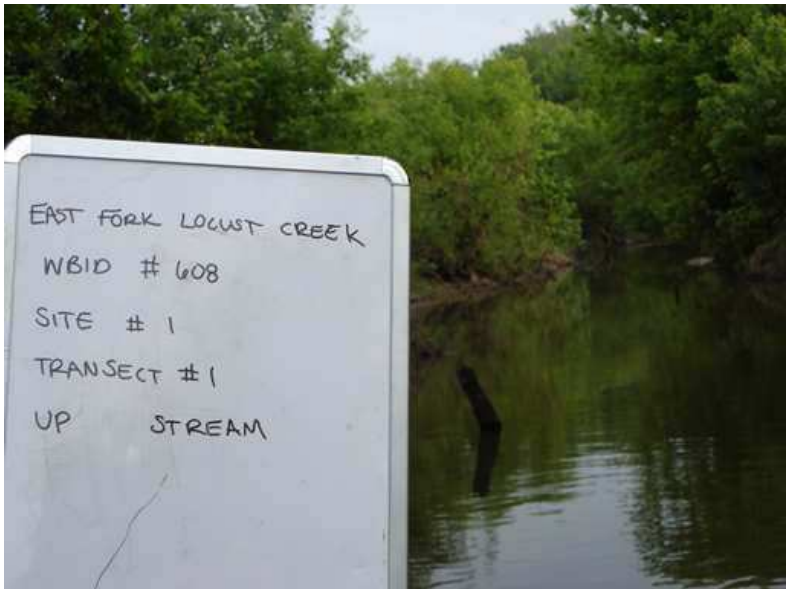
Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.
GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.
Transects in order of up to downstream.
Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1
Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: [signature] Date: 5/23/07

RMC 5-24-07

5/25/07

WBID# 608



Site# 1 Photo ID# 0608-1-207, Upstream

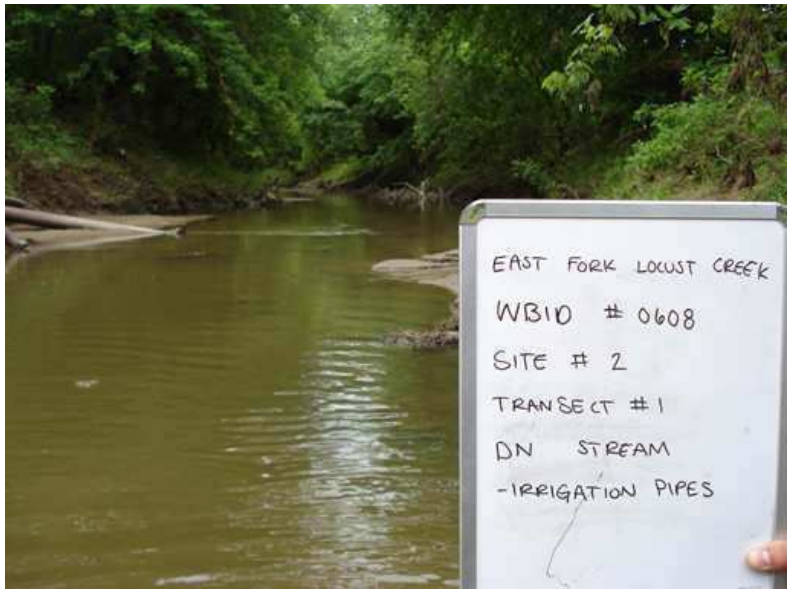
Site# 1 Photo ID# 0608-1-208, Downstream

Site# 1 Photo ID# 0608-1-210, Cracked pipe

Site# 1 Photo ID# 0608-1-209, Pipe

WBID# 608

Site# 1 Photo ID# 0608-1-211, Footprints



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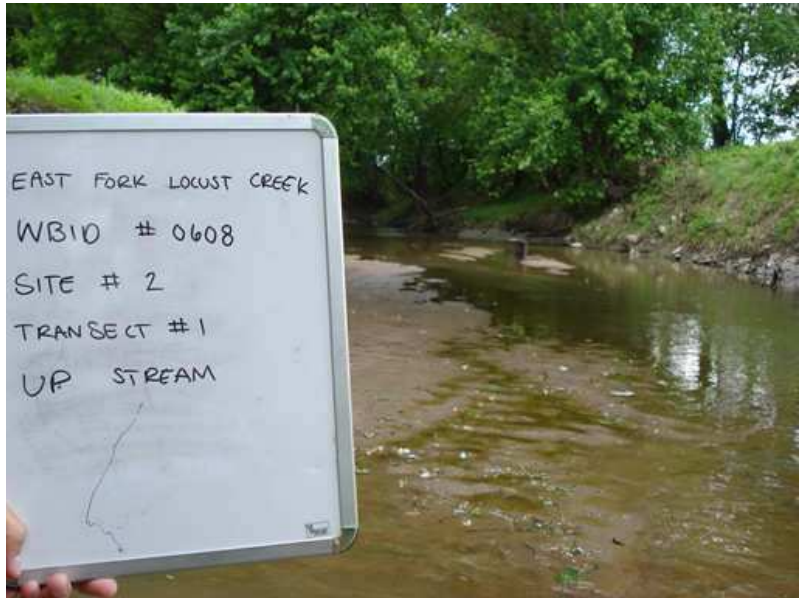

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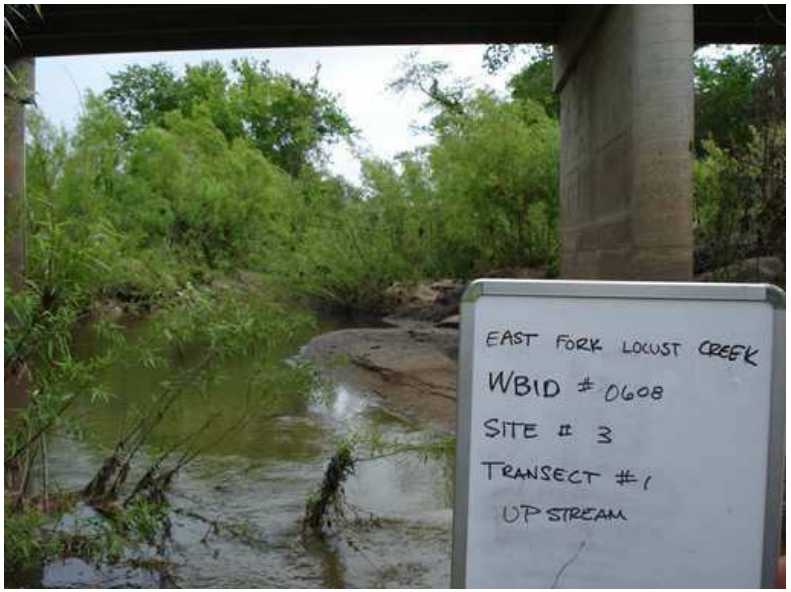
WBID# 608



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Site# 3 Photo ID# 0608-3-215, Downstream

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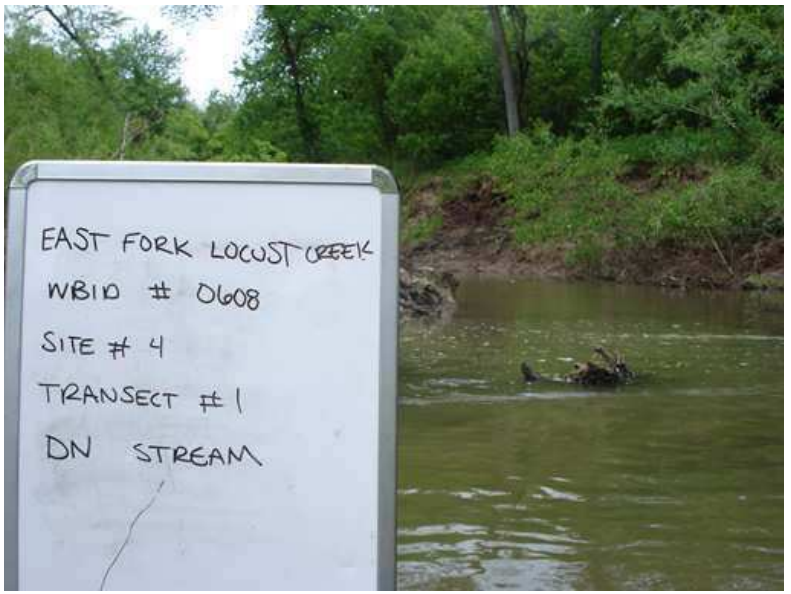
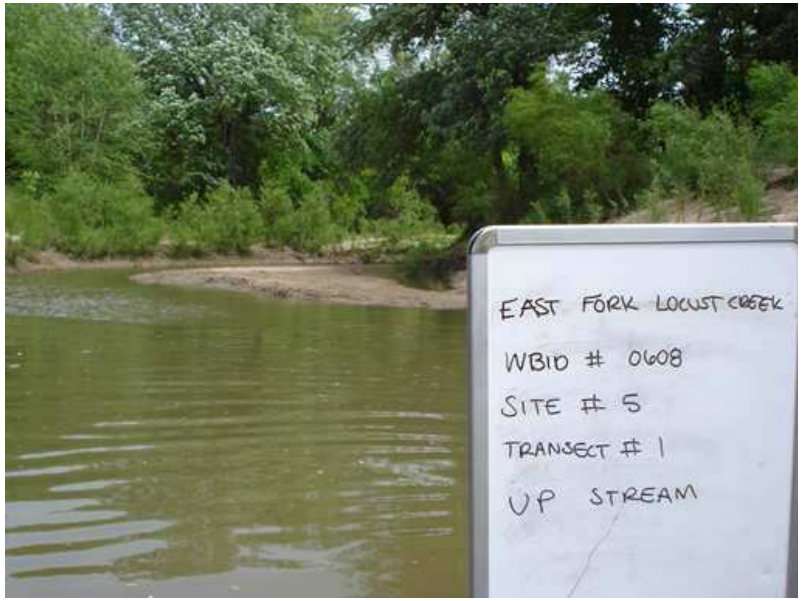


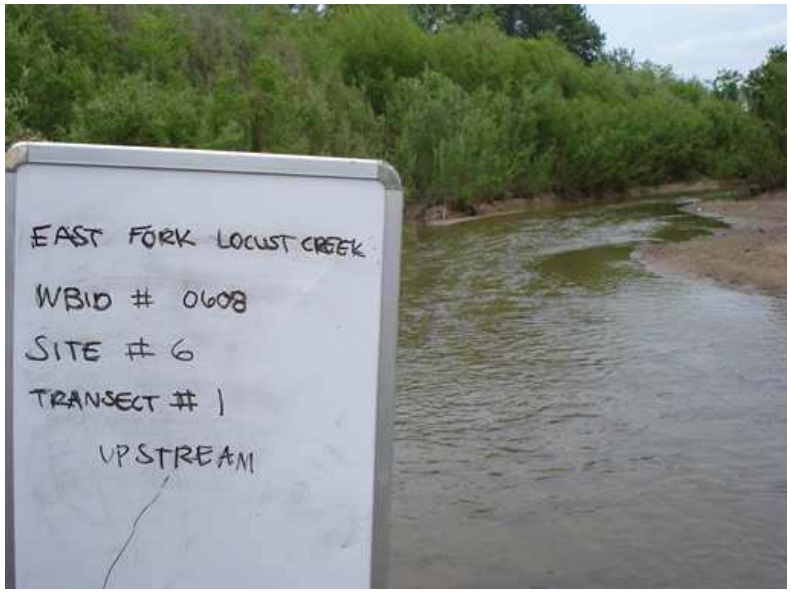
Site# 4 Photo ID# 0608-4-217, Downstream

WBID# 608



Site# 5 Photo ID# 0608-5-218, Upstream

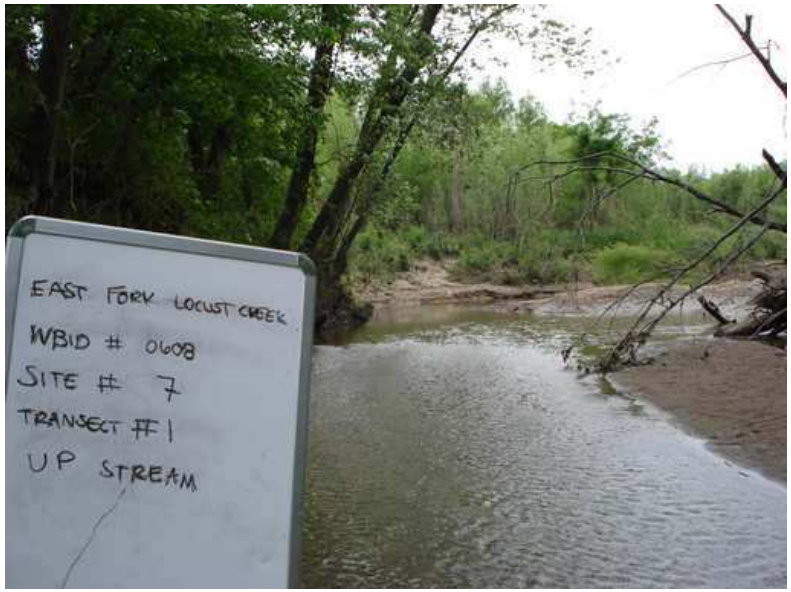
Site# 5 Photo ID# 0608-5-219, Downstream



Site# 6 Photo ID# 0608-6-220, Upstream

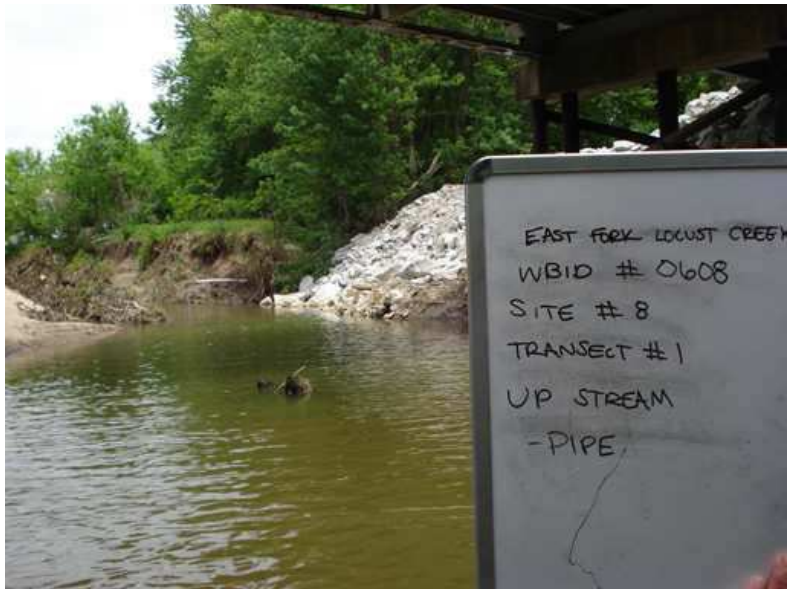
Site# 6 Photo ID# 0608-6-221, Downstream

WBID# 608



Site# 7 Photo ID# 0608-7-222, Upstream

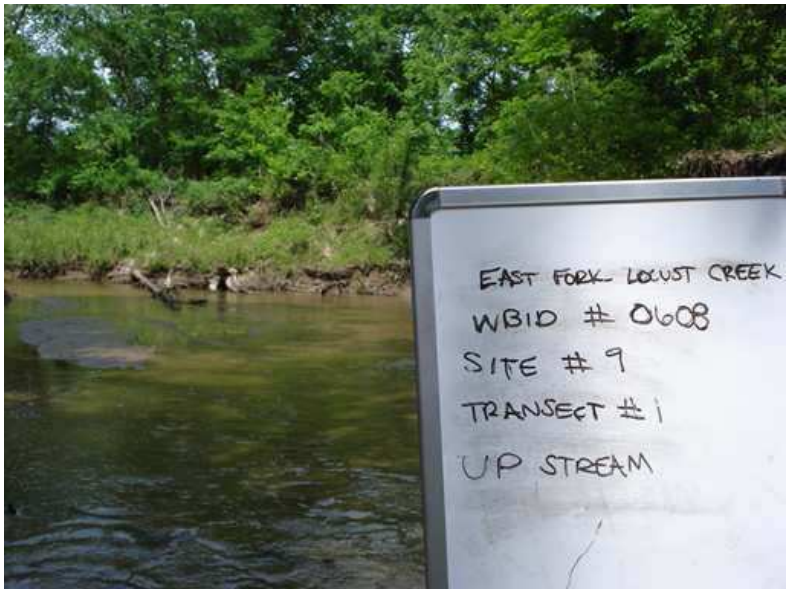
Site# 7 Photo ID# 0608-7-223, Downstream



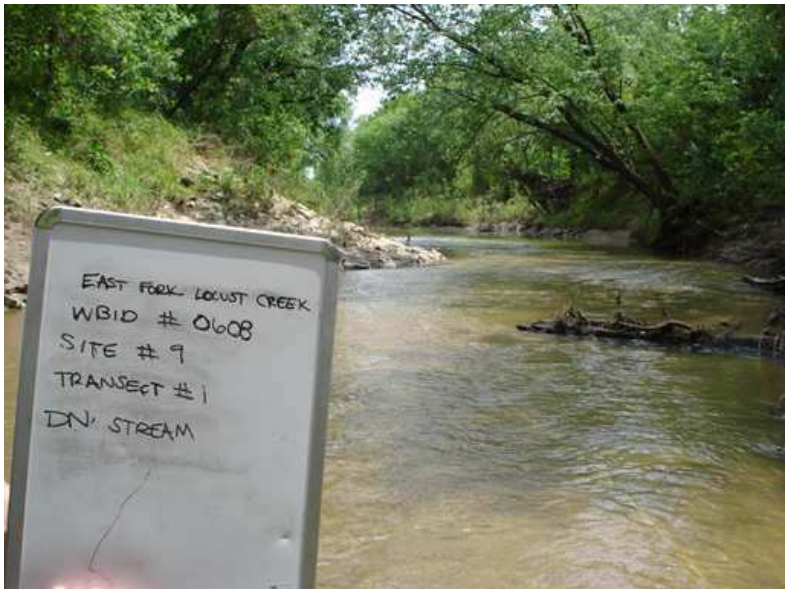
Site# 8 Photo ID# 0608-8-224, Upstream

Site# 8 Photo ID# 0608-8-225, Downstream

WBID# 608



Site# 9 Photo ID# 0608-9-226, Upstream



Site# 9 Photo ID# 0608-9-228, Downstream